



Incipient Albizia Control in Priority Watershed Areas: Waiawa

October 1, 2018 – October 31, 2019

2019 Final Report to:

HAWAII INVASIVE SPECIES COUNCIL

Prepared By:

KO'OLAU MOUNTAINS WATERSHED PARTNERSHIP

INTRODUCTION

The Ko'olau Mountains Watershed Partnership (KMWP) is a project of the Pacific Cooperative Studies Unit (PCSU) with the University of Hawai'i that addresses island-wide conservation issues by working with public and private conservation groups, state, municipal and federal agencies, and private landowners. KMWP's mission is to foster landowner collaboration and perpetuate the water resources of O'ahu by protecting and enhancing the forests of the Ko'olau and its invaluable native ecosystems..

Albizia (*Falcataria moluccana*) is an extremely fast-growing tree species and was planted as part of the early reforestation efforts in 1917. Since that time, it has come to dominate significant portions of O'ahu's low-elevation forest (e.g. Mānoa, Kāne'ohe, Maunawili, Waikāne). It is now infiltrating and becoming established in priority watershed areas and intact native forests at higher elevations such as the Waiawa Management Unit (MU). The threat from this species is extremely high. A major concern is that mature albizia trees dramatically change the forest ecology by altering understory light profile and nitrogen levels within the soil. The longer the trees remain unchecked, the greater the risk of the native vegetation being negatively affected by both dense shade and recruitment of other nitrogen loving invasive species like strawberry guava. Thus, further reducing the likelihood of full recovery. As this species produces a large dense canopy, the presence of albizia in an area can also reduce the effectiveness of aerial surveys for other priority early detection species such as miconia. Shade tolerant species like miconia thrive in the high nitrogen environment created by a stand of albizia and can remain undetected below the canopy. For these multiple reasons, albizia control within the Waiawa Management Unit (MU) is a high priority for KMWP.

The Waiawa MU is an approximately 1,500-acre area and is currently in the planning stages to become one of the next fenced units for KMWP. Waiawa is dominated by native wet forest and is categorized as a priority 1 watershed. This watershed feeds into the Pearl Harbor Aquifer, where O‘ahu gets the majority of its fresh water. Active management of priority weeds by KMWP in this MUs is underway however continued efforts are needed. Mature albizia are currently found in incipient numbers across the MU. Although target numbers are relatively low, the effort required to control individual trees is high. Access to target trees will require helicopter flights into the area and up to a full day to traverse across steep, densely-forested terrain. Though the initial effort to control these incipient trees is relatively substantial, it is insignificant when compared to the future control costs associated with attempting to control a robust and dominant albizia population.

PROJECT GOALS AND OBJECTIVES

The goals of this project are to:

- Reduce the impacts of invasive species in priority watersheds
- Protect water quality and supply for communities and agriculture on Oahu
- Improve habitat quality for at-risk species.

The objective to be met under this grant is:

- Survey and control incipient population of *Falcataria moluccana* in the Waiawa Management Unit

PROJECT SUMMARY

In early 2019, *F. moluccana* was mapped utilizing a combination of imagery analysis of high-resolution aerial imagery, ground surveys and helicopter surveys. Distribution maps were generated including a heat map showing the areas with highest densities of target trees. A control strategy was developed focusing on the north side of the unit on the summit and working south. In addition, target locations, terrain and access routes were scouted via helicopter during insert flights to remote landing zones.

During 2019, a combination of day trips and camping trips were conducted to treat target *F. moluccana*. 55 Albizia were treated across 71.5 acres during 485 hours. Treatment was conducted with the IPA method and 100% Milestone.

Table 1. KMWP treatment of Albizia in Waiawa in 2019.

Treated Area	Falmol Treated	Hours
71.5	55	485

Waiawa Falmol Distribution

Projection: NAD83 UTM Zone 48N
 Basemap: USGS OAHU DRS
 Vector Data: HMVP
 Scale: 1:15,000
 Map Production Date: 12/10/2019

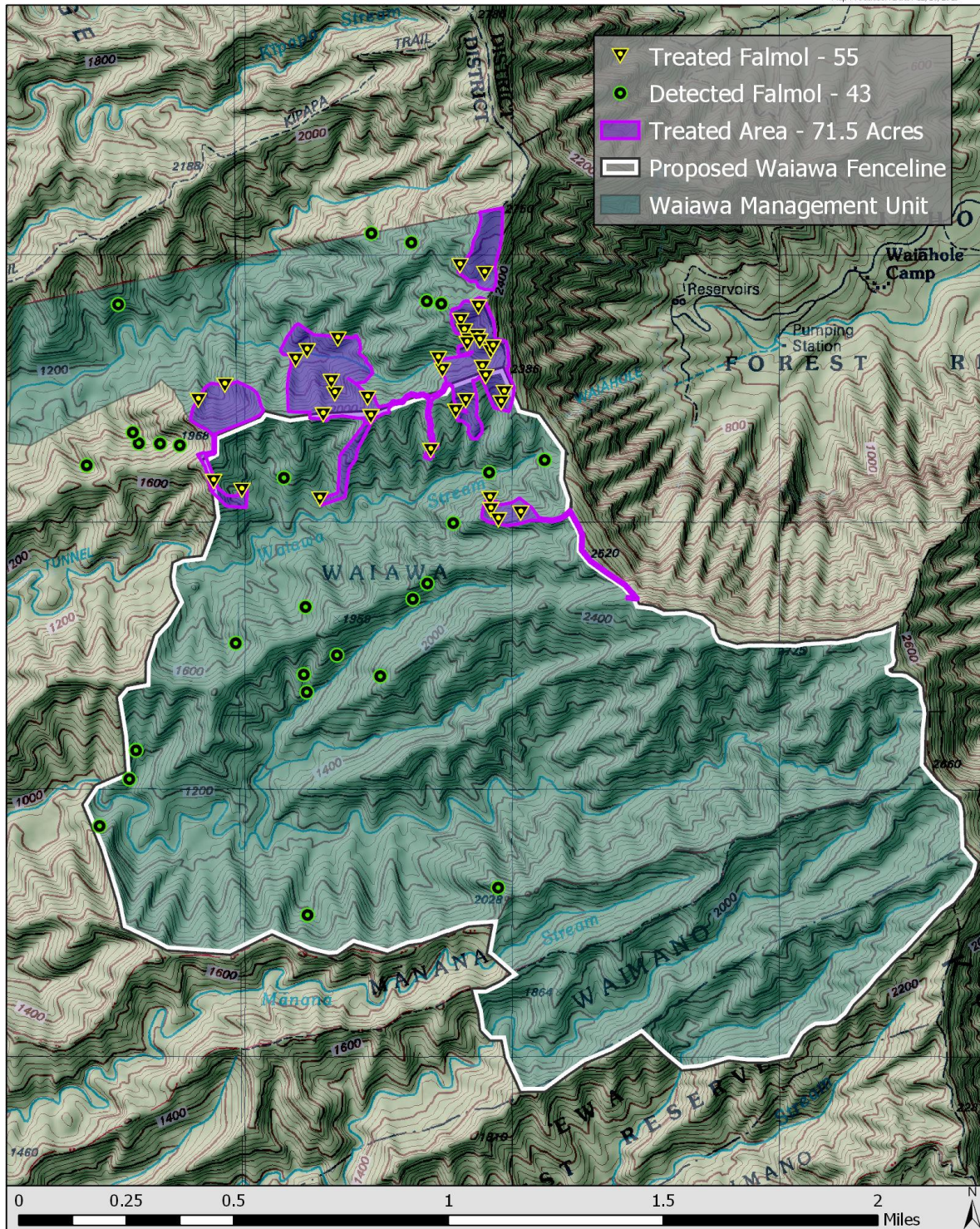


Figure 1. Albizia distribution and treatment by KMWP staff in Waiawa in 2019.



Figure 2. Waiawa MU with steep terrain and dominant native vegetation. Note the target Albizia locations.



Figure 3. Target Albizia on the slope in Waiawa.

Next Steps

Albizia treatment in Waiawa will continue in 2020 building off of the surveys and treatment conducted in 2019. Targets will be in the central and southern parts of the MU. Some trees may be difficult to access and may require rope work or future aerial treatment.